

The role of motivational interviewing in addressing depression and poor motivation in an individual with traumatic brain injury: a case report

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SUMMARY

Traumatic brain injury (TBI) is an evolving disease that leads to neurobehavioural disability that causes poor psychosocial outcomes. The commonest sequelae in TBI include major depressive disorder and motivational deficits, especially in rehabilitation engagement and social reintegration. Here, we discuss a 34-year-old man who had TBI and developed depression and poor motivation as sequelae. This case report highlights the use of Motivational interviewing (MI), a person-centered counselling method, to strengthen and enhance his motivation to take his medications and go for the rehabilitation program. Following MI, the patient improved, adhered to medication for depression and decided to go for rehabilitation programme, proving the intervention successful.

INTRODUCTION

In 1848, John Harlow famously described personality changes in Phineas Gage, who survived an iron rod through his skull, damaging the frontal lobe.¹ Following the incident, this premodern socially well-adapted responsible man became profane, negligent and irresponsible. This altered state of mind was termed 'traumatic insanities' by Adolf Meyer—behavior disturbances from head injuries which included psychosis, mood disturbances, alterations in consciousness and neurological symptoms.¹

Acquired brain injury (ABI) is a brain injury that occurs after birth and is not related to a degenerative or congenital disease.² Traumatic brain injury (TBI) is defined as brain damage from an external mechanical force and is an ABI.^{1,2} It is frequently underreported and amongst the top three admissions to the intensive care units.³ Road traffic accidents affecting males aged 15–24 years make up 80% of the trauma cases in Malaysia.⁴ TBI is an evolving disease that leads to neurobehavioural disability (NBD).^{3,5} NBD describes neuropsychological disabilities (i.e. executive and attentional dysfunction, lack of insight/awareness, inadequate impulse control) and behavioural or mood disturbances (i.e. labile mood, depressed mood, personality changes) which lead to poor psychosocial outcomes.⁵ Major depressive disorder (MDD) is the commonest psychiatric sequelae in TBI.¹ The

management of MDD in these cohort of patients involves a multi-pronged approach requiring judicious use of pharmacotherapy, taking into consideration the potential anticholinergic side-effects of certain antidepressants that may further exacerbate cognitive impairment. In addition, psychotherapy, which is another modality of treatment, needs to be tailored accordingly to the cognitive limitations that may arise in these patients. TBI victims also suffer from motivational deficits, which may hinder rehabilitation engagement as well as social reintegration.⁵

This case report highlights the use of motivational interviewing (MI) in a 34-year-old man diagnosed with TBI and MDD who did not adhere to his medications and declined to enter a rehabilitation program. The Consultation Liaison psychiatry team used MI to help him get insight about the benefits of rehabilitation. He showed good improvement a month later.

CASE PRESENTATION

In February 2022, MF, 34-year-old man, with no past medical history was involved in a major motor vehicle accident and developed TBI. He suffered from multiple intracranial haemorrhages over the right occipital and thalamus, right frontal extradural haemorrhage and subarachnoid haemorrhage, pneumothorax and fractures over right T1 and T2 transverse spinal processes, right posterior rib and clavicle and closed fracture of his right fibula. His Glasgow Coma Scale (GCS) was 10/15 (E4 V2 M4) upon initial assessment, and he was intubated for 10 days in view of moderate head injury. He was referred to the rehabilitation physician after extubation and subsequent recovery.

On examination, he had 4/5 power over his bilateral lower limbs. Cognitive tests showed that he scored 5/26 in Montreal Cognitive Assessment (MOCA), and he was Level V (Confused-inappropriate) in the Ranchos Los Amigo Scale. His Patient Health Questionnaire (PHQ-9) test was 13, and he expressed frustration about his condition and guilt that his youngest brother died in the same accident. Although he recovered from his injuries, he was limited in his mobility, and he felt his thinking was slow.

Table I: Chronology of Events

February 2022	August 2022	28 September 2022	07 December 2022	18 January 2023
<p>MF was involved in a major motor vehicle accident, and developed TBI.</p> <p>His Glasgow Coma Scale (GCS) was 10/15 (E4 V2 M4) upon initial assessment and he was intubated for 10 days in view of moderate head injury. He suffered from multiple intracranial hemorrhages as well as multiple fractures. He was referred to the rehabilitation physician after extubation and subsequent recovery.</p> <p>Cognitive tests showed : 5/26 in Montreal Cognitive Assessment (MOCA)</p> <p>: Level V (Confused-inappropriate) in the Ranchos Los Amigo Scale</p> <p>: Patient Health Questionnaire (PHQ-9) test was 13/27</p>	<p>There was an improvement in his MOCA scores to 17/30</p> <p>PHQ-9 scores had increased to 16/27, indicative of worsening depressive symptoms.</p> <p>MF with diagnosed with Major Depressive Disorder secondary to TBI. He was commenced on an antidepressant (Tablet Sertraline 50 mg at night)</p>	<p>MF felt demotivated, hopeless and worthless with negative self-esteem. He was switched to tablet mirtazapine 15 mg ON due to acute dyskinesia over his right hand.</p> <p>He was in the precontemplation stage of change and due to poor motivation, low mood and anhedonia, he refused to enter a rehabilitation program. He was assessed using motivational interviewing using open-ended questions focusing on his ambivalence.</p>	<p>Affirmations and reflective questioning were used to validate and support MF focusing on his strengths and efforts.</p> <p>He subsequently began to consider the options of rehabilitation, moving him from the pre-contemplative stage of change to contemplative stage.</p>	<p>MF moved from contemplation to action stage. He had a well-defined goal and was keen to enroll in the return to work (RTW) programme.</p> <p>His PHQ-9 scores had shown a reduction to 3/27 as well.</p>

Table II: Motivational Interviewing Strategies utilised with MF

MI strategies	Example - verbatim excerpts of session quotes	Reason for questioning
Using Open-ended questions in order to explore his motivations and goals while eliciting statements that develop discrepancies.	<p>'Would it be ok with you if we discuss about your issues now'</p> <p>'I understand you have some concerns about illness and your medications, could you tell me about them'</p> <p>'MF, I can see this is difficult for you, I would like to understand why do you not want to go to the rehabilitation program'</p>	<p>With this type of questioning, we are encouraging the patient to do most of the talking.</p> <p>The psychiatrist/family medicine practitioner will also learn more about why MF feels demotivated, his values and goals, and also what he cares about. There is active listening and empathy.</p>
Using Affirmations in the form of compliments, appreciation and understanding to enhance rapport and highlight the positive changes.	<p>'MF, thank you for telling me what is troubling you. I appreciate that you were open to me about feeling sad and demotivated.'</p> <p>"MF, I know it wasn't easy for you to tell me that you were not taking your medications. If you remember, in our last appointment, your mood improved a lot while being on medication. You were very good being compliant to your medications at that time. Why don't we retry taking the medications again and see what is the outcome?'</p>	<p>Affirmations support and validate MF's journey to change.</p> <p>The psychiatrist has a better rapport through this strategy.</p> <p>By highlighting his previous compliance to medications, MF's strengths and efforts are highlighted and affirmed.</p>
Utilising Reflections by rephrasing statements used to foster motivation and build trust.	<p>'MF, I know that telling me all this is difficult. Being diagnosed with TBI must be hard for you. On top of that, you are grieving on the loss of your brother. It is easy to stay in the house, not take your medications and stay in your room from morning to night. However, if you realize, you are feeling very demotivated and sad. You are still young and capable, there is still hope for you and everyone (family members and doctors) are trying to help you get on your feet.'</p>	<p>The psychiatrist rephrases MF's statement in order to capture its implicit meaning and emotion. Reflection is a way to tell the patient that the psychiatrist is listening to him and is helping him understand what are his motivations. It can be used to reinforce desire to improve and get better.</p>
Summarising in an empathetic way in order to point out discrepancies between his current situation and future goals.	<p>'MF, so far you mentioned to me that you have been feeling down and helpless about your situation. Am I correctly understanding the situation you are facing?'</p> <p>'From what I understand, your Rehab physician says you have good potential and is willing to accommodate to all your requests, which will lead to a better future. You do not have to depend on your relatives. What are your worries about starting the program? Maybe after this discussion you can go home and think about entering the program?'</p> <p>'You are still feeling sad and demotivated. Why don't you start retaking Mirtazapine since your mood improved the last time?'</p> <p>'Why don't we discuss the pros and cons of not taking the medications'</p> <p>'Give yourself sometime to think about our conversation. Its ok not to be 100% sure about this'</p>	<p>Through this strategy, the psychiatrist helps the patient to see the positives in doing the rehabilitation program and taking his medications.</p> <p>MF shows his ambivalence about the program and medication instead of reluctance, which is an acceptable state of mind that empowers change. This helps him realize that he has a better future if he joins the program.</p>

His subsequent appointment in August 2022, noted an improvement in his MOCA scores to 17/30. However his PHQ-9 scores had increased to 16/27, indicative of worsening depressive symptoms. The Consultation-Liaison psychiatrist diagnosed MF with Major Depressive Disorder secondary to TBI. He predominantly suffered from low mood, anhedonia, hopelessness, worthlessness, sleep disturbances and guilt regarding his brother's death. He felt useless because he was having memory gaps. He became more withdrawn and kept to himself. The Rehabilitation physician started him on an antidepressant (tablet sertraline 50 mg at night); however, due to acute dyskinesia over his right hand, his medication was switched to tablet Mirtazapine 15 mg at night. He experienced mild improvements in his mood and his sleep.

In the next review, he was not adherent to his medications for one month. MF felt demotivated, hopeless and worthless, with negative self-esteem. He was in the precontemplation stage of change due to poor motivation, low mood and anhedonia. He refused to enter a rehabilitation program. Table I depicts an overview of MF's case.

MI, a person-centered counselling method, was used to strengthen and enhance MF's motivation to take his medications and go for the rehabilitation program.⁶ The administration of MI using the transtheoretical model (Prochaska & DiClemente, 1982) is used as a framework in order to evoke his motivations, strengths and resources and leverage those for change by seeing and developing change talk. This was done to facilitate collaborative care as well as realistic goal-setting in order to reach the desired outcome of rehabilitation and gainful employment. MF demonstrated a reluctance to participate and engage in rehabilitation exercises initially, and MI was utilised to enhance MF's intrinsic motivation to change by working on his ambivalence and increasing self-efficacy. The sessions were conducted by a Consultation-Liaison fellow, with a Masters in Psychiatry and were conducted during hour-long sessions, over three visits. The MI strategies are described in Table II.

At the end of the interview, MF went from precontemplation to contemplation stage, wherein he initially was unwilling to engage with the rehabilitation team and did not seem to recognise there was a problem with that. In the contemplative stage, upon evoking change talk, he became more confident and was willing to change, and during his next review with the Rehabilitation team a month later, MF was in the action stage. He had a clear goal setting. He was keen to undergo the return to work (RTW) program and had applied back to the Rehabilitation Center. He was compliant with his antidepressant, and his PHQ-9 scores showed a reduction from 16/27 to 3/27, indicative of an improvement in his depressive symptoms. Prochaska and DiClemente's transtheoretical model of change using MI was used as the framework to move MF through the stages.⁶ He was initially in a pre-contemplative stage, which was predominantly defined by a lack of engagement as well as motivation and proceeded through the stages of contemplating the options and strategies needed to get to his end goal of rehabilitation and subsequently taking the action of enrolling in a RTW programme. Although these motivations were intrinsic and subjective, the changes were observable in his actions by the treating team.

DISCUSSION

Neurobehavioural disabilities in TBI patients are thought to be due to low levels of neurotransmitters, neural circuits damage and diffuse axonal injuries involving the prefrontal cortex, hippocampus, amygdala, thalamus and basal ganglia.^{1,5} When it comes to motivation, each neurotransmitter plays a role. Dopamine helps in reward-based decision-making processes, norepinephrine helps in generating adequate levels of motivation and serotonin deals with rewards and punishment.⁵

The aim of rehabilitation in TBI is to improve their disability and cognitive function, reintegrate into society, and have a fairly good quality of life without much dependence on caregivers or family.² MF's injuries involved the right frontal and occipital area. The frontal lobes have the highest concentration of adrenergic and serotonergic fibers, therefore, Mirtazapine, an antidepressant with norepinephrine and serotonergic properties, was used as a mode of treatment.⁷

MI was used to enhance his confidence and engage his commitment to neurorehabilitation for a meaningful life post-injury.⁸ It is important to target the early stages of recovery as patients with TBI tend to show a lack of engagement in neurorehabilitation activities.⁹ In order to engage with the patient, a non-confrontation, collaborative and self-efficacious intervention would prove beneficial.⁹ During MI, reflective listening and acceptance are used to resolve patient's ambivalence about change.⁹ By enhancing MF's confidence and determination, he believes that change is possible and is therefore willing to go forward. One month after the MI, MF showed noticeable improvements and was working towards his goals of engaging in the return to work (RTW) programme with the aim of securing sustained employment.

MI techniques have been shown to promote an increased sense of self-awareness and engagement in rehabilitation following acquired brain injury and a conceptual framework to guide rehabilitation goals has been discussed in literature.⁹ This case demonstrates the clinical improvement noted in MF and to note the improvement in his goals as he moves through the stages of change utilising the principles of motivation interviewing.⁷

MI proved beneficial because of several factors. This was a collaborative effort between the psychiatrist and the patient. By using the strategies, motivation for change was enhanced by drawing on his own aspirations, goals and values. The psychiatrist affirmed the patient's autonomy, encouraging him to think about the benefits of taking the medications and going into the program.

CONCLUSION

In conclusion, the common sequelae for patients with TBI is depression, which can lead to poor insight, worthlessness and hopelessness. These patients suffer from psychological and cognitive issues, which has the potential to impair their motivation as well as decision-making abilities. MI, a non-confrontation, collaboration and self-efficacious intervention, may be useful in helping the patient participate in rehabilitation activities.

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CONSENT

Written informed consent was obtained from the patient for publication of this case report.

COMPETING Interest

The authors declare that they have no conflict of interest.

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